

### REMARKS

Claims 1-51 were pending as of the action mailed January 10, 2007. Claims 1, 12, 29, 31, 33, 36, 42, 46, 48, 50 are in independent form.

Claims 1, 7, 15, 17, 21, 27, 28, 29, 30, 31, 35, 36, 42, 46, 47, 48, and 51 are being amended to remedy informalities and/or antecedent basis issues.

Claims 11 and 23 are being amended. Support for the amendments is found in at least pages 11, 13, and 14. .

Claims 1, 12, 29, 31, 33, 36, 42, 46, 48, and 50 are being amended. Support for the amendments is found in at least page 7 and FIG. 2A.

Claims 21, 30, 31, 47, and 48 are being amended. Support for the amendments is found at least in pages 5-7 of the specification.

The paragraph beginning at p. 15, line 22 of the specification and the paragraph beginning at p. 16, line 13 of the specification are being amended.

Reexamination and reconsideration are respectfully requested in light of the above amendments and the following remarks.

### INTERVIEW SUMMARY

The applicant thanks examiner Mary C. Jacob for granting a telephonic interview on February 16, 2007. The time spent with applicant's representatives, Daniel Burns and Andrew Leung, was greatly appreciated. During the interview, the claims were discussed in light of the cited art, the § 112 rejections, and the § 101 rejection. Claim amendments were suggested by the examiner with respect to the § 112 and § 101 rejections. No agreement on the claims was reached with respect to the cited art.

## OBJECTIONS

Claims 1, 7, 15, 27, 28, 35, 36, 42, 46, and 48 were objected to for alleged informalities. The objection is respectfully traversed.

Claims 1, 36. The examiner objected to claims 1 and 36, alleging that the claim term “generation technique” is susceptible to broad interpretation. Even assuming that the examiner’s allegation is correct, susceptibility to broad interpretation is not a proper basis for objecting to a claim. Further, the examiner has acknowledged that the term is adequately defined. Because the term is adequately defined, the applicant is under no legal obligation to amend the claim merely because the term may be susceptible to broad interpretation. Thus, this objection should be withdrawn.

Claims 7, 15, 27, 28, 35, 36, 42, 46, 48. These claims are being amended to remedy the indicated informalities. Withdrawal of this objection is respectfully requested.

## § 112 FIRST PARAGRAPH REJECTIONS

Claims 11, 21, 23, 30, 31, 47, 48 were rejected under § 112, first paragraph for allegedly failing to comply with the enablement requirement. The rejection is respectfully traversed.

Claims 11, 23. Claims 11 and 23 recite “non-regularized boolean operation,” which the examiner rejected as not disclosed in the specification and thus non-enabling. The rejected claims are being amended to recite “selective boolean operation,” which is disclosed in the specification. Withdrawal of this rejection is respectfully requested.

Claims 21, 30, 31, 47, 48. Claims 21, 30, 31, 47, and 48 recite “wire body.” The examiner asserts that the term is not recited in the specification. The specification is being amended to explicitly recite a wire body.

The examiner cited Herzberg (U.S. Patent No. 5,708,469) as an example of an alternative definition of “wire body.” The applicant submits that Herzberg is an improper guide for interpreting the term “wire body” in this application. One of ordinary skill in the art will reasonably read the instant application as involving the solid modeling or computer aided design (CAD) arts. However, Herzberg does not involve the solid modeling or CAD arts; Herzberg

deals with positioning of cameras within a wire cage. Thus, one of ordinary skill in the art who is reading the instant application is unlikely to turn to Herzberg for guidance on how to interpret the term “wire body” as it is used in the solid modeling or CAD arts.

However, to expedite prosecution of this application, the rejected claims are being amended to recite that the operations are performed in a computer aided design environment. The rejection of these claims should be withdrawn.

#### § 112 SECOND PARAGRAPH REJECTIONS

Claims 1-28, 30-45, 47, 49-51 were rejected under § 112, second paragraph for allegedly being indefinite. The rejection is respectfully traversed.

Antecedent basis. Claims 1, 21, 30, 31, 35, 36, 42, 47, and 51 are being amended to remedy the antecedent basis issues described by the examiner. Withdrawal of the rejection of these claims is respectfully requested.

With respect to claim 12, the applicant submits that “conditionally trimming ... the tool” in the claim provides the antecedent basis for “the untrimmed tool” and “the trimmed tool.” If the tool is trimmed by the conditional trimming, then the tool is “the trimmed tool.” If the tool is left untrimmed by the conditional trimming, then the tool is “the untrimmed tool.” Thus, the terms “untrimmed tool” and “trimmed tool” have antecedent basis. Withdrawal of the rejection of this claim is respectfully requested.

Claims 25, 32, 33, 49, 50. Claims 25, 32, 33, 49, 50 recite “valid” faces. The specification recites criteria for determining an invalid face. The examiner acknowledged that a “valid” face is the opposite of an “invalid” face, but the examiner alleged that the criteria determining an invalid face is inadequately defined. The specification is being amended to clarify that, in various embodiments, a face is invalid if the face satisfies any of the described criteria. The applicant submits that the specification as amended adequately defines the criteria for an invalid face and a valid face. Withdrawal of this rejection is respectfully requested.

### § 101 REJECTION

Claims 1-51 have been rejected under § 101 as non-statutory subject matter for failing to produce a tangible result. To expedite prosecution, and without prejudice, independent claims 1, 12, 29, 31, 33, 36, 42, 46, 48, and 50 are being amended to recite that the data representation of the fillet weld bead is stored in a computer-readable medium or a storage medium. The applicant submits that the amended claims, as well as claims dependent from the amended claims, produce a tangible result. Withdrawal of this rejection is respectfully requested.

### § 103 REJECTIONS

Claims 1-4, 7-12, 15-39, 42, 45-51 were rejected under § 103 as unpatentable over Subrahmanyam, "Feature Attributes and their Role in Product Modeling," in view of CAI, "PROARC: CAD-Based Programming System for Arc Welding Robots in One-Off Production Runs." The rejection is respectfully traversed.

As a preliminary matter, the applicant notes that Subrahmanyam defines an "attribute" as a characteristic quality or property which associates meaning to an entity, significant to a particular stage in the life cycle of a product." Subrahmanyam, Section 1 ("Introduction"). The examples of attributes listed throughout Subrahmanyam include color of a face, thread type, feature type, face relationship, and so forth.

Claim 1. Claim 1 recites "examining [] facial characteristics of the faces of the components." The examiner cites sections 3.6-3.7 of Subrahmanyam as teaching this feature.

Subrahmanyam does not teach this feature. Sections 3.6-3.7 merely describe certain types of attributes, including attributes related to faces. The cited sections do not teach examining the facial characteristics of a face of a component.

Claim 1 also recites "selecting [] a generation technique based at least in part on a result of said examining; and applying [] the selected generation technique to generate a data representation of the fillet weld bead."

Subrahmanyam does not teach these features. The examiner cites sections 4.2 – 4.4 and Table 1 of Subrahmanyam for the rejection. Sections 4.2 – 4.4 and Table 1 describe the behavior

of attributes in light of operations on shapes. For example, Table 1 shows behaviors of attributes with respect to various operations on shapes. The cited sections do not teach “selecting [] a generation technique based at least in part on a result of said examining; and applying [] the selected generation technique.”

The examiner responded by asserting that sections 4.2 – 4.4 and Table 1 describe general modeling operations and the operations that are performed in the generation of solid models that include processing of attributes, which teach selecting and applying a generation technique. While it may be the case that the cited sections describe modeling operations, that does not necessarily imply a selection of a modeling operation or generation technique. Additionally, the cited sections describe the processing or behavior of attributes as a result of modeling operations, not that a shape is generated by processing attributes. Further, the cited sections do not teach selecting a generation technique based at least on an examination of facial characteristics of components. The cited sections of Subrahmanyam merely describe behaviors of attributes with respect to various modeling operations. CAI has not been shown to remedy this deficiency. Thus, the examiner has not shown that the combination of Subrahmanyam and CAI teaches the recited feature.

For at least the above reasons, the rejection should be withdrawn.

Claims 2-4, 7-11. Claims 2-4 and 7-11 are dependent from claim 1 and are allowable for at least the reasons set forth above.

Claim 12. Claim 12 recites in part, “constructing ... a profile based at least in part on faces of components []; generating ... a tool based at least in part on the constructed profile.”

The examiner asserts that Subrahmanyam teaches “generating ... a tool based at least in part on a profile,” citing p. 117, col. 2, line 5 and Figure 4 of Subrahmanyam. The cited portion of Subrahmanyam shows a first block geometry (starting block), a second block geometry (slot), and a cylindrical geometry (hole). There is no teaching or suggestion in the cited portion of Subrahmanyam of generating a tool based on a constructed profile. Assuming for the sake of argument that attributes constitute a profile, the cited portion of Subrahmanyam shows that the

starting block, the slot, and the hole have attributes; there is no teaching that they are generated based on the attributes.

The cited portion of Subrahmanyam also shows subtracting the slot and the hole from the starting block. The examiner alleges that the starting block is the “tool” recited in the claim, and that the starting block is generated as part of the design view, which is created from user defined attributes and system attributes constituting a constructed profile, citing Figure 3. The description of Figure 3 in Subrahmanyam (p. 116, column 2, last paragraph) describes the design view as representing a design model which has either system or user-defined attributes or both. It does not say that the design model is generated from system or user-defined attributes. Nor does it teach that system or user-defined attributes constitute a constructed profile; the examiner’s assertion, in her rebuttal to the applicant’s previous arguments, that the user-defined and system attributes constitute a constructed profile is conclusory and without support. CAI has not been shown to remedy this deficiency.

Thus, the examiner has not shown that the combination of Subrahmanyam and CAI teaches “generating ... a tool based at least in part on a constructed profile.” Accordingly, claim 12 is in condition for allowance.

Claims 15-28. Claims 15-28 are dependent from claim 12 and are allowable for at least the reasons set forth above.

Claim 29. Claim 20 recites “replicating within the computing environment, data representations of the located one or more bodies.”

The examiner cites the slot feature attributes and hole feature attributes of Figure 4 of Subrahmanyam as allegedly teaching this feature. Figure 4 shows a slot feature with attributes and a hole feature with attributes. The attributes of the slot feature include an attribute of “slot,” “wall,” “roof,” and “floor.” The attributes of the hole feature include an attribute of “hole.” These attributes do not teach “data representations of the located one or more bodies.” Recalling the definition of “attribute” in Subrahmanyam, the cited attributes associate meaning to the respective features and do not define, by themselves, the dimensions, shape, or geometry of the

features. For example, the hole attribute of the hole feature says nothing about the actual dimensions or the shape of the hole feature. CAI has not been shown to remedy this deficiency.

Thus, the cited attributes of Subrahmanyam do not teach “data representations of the located one or more bodies.” Withdrawal of the rejection is respectfully requested.

Claim 30. Claim 30 is dependent from claim 29 and is allowable for at least the reasons set forth above.

Claim 31. Claim 31 recites in part, “collecting ... one or more edges.”

The examiner cited Subrahmanyam, section 3.6, lines 5-8 as allegedly teaching this feature. The cited portion describes two surfaces incident at an edge and an example of an edge-level attribute (convex or concave). There is no teaching of collecting edges in the cited portion. A mere description of an edge and an edge-level attribute does not, in itself, teach a collecting of edges. Thus, the examiner has not shown that that Subrahmanyam teaches “collecting ... one or more edges.”

Claim 31 as amended also recites in part, “replicating ... data representations of the collected one or more edges.”

The examiner cited Subrahmanyam, section 4.4, lines 9-15 as allegedly teaching this feature. The cited portion of Subrahmanyam describes copying or deleting attributes of a face; the cited portion does not teach copying or replicating edges or data representations of such. Even if copying attributes is the same as replicating data representations, the cited lines describe copying attributes of faces, not attributes of edges. Thus, the examiner has not shown that that Subrahmanyam teaches “replicating ... data representations of the collected one or more edges.”

Because the examiner has not shown that Subrahmanyam teaches the recited features described above, and CAI has not been shown to remedy these deficiencies, the examiner has not shown that the combination of Subrahmanyam and CAI teaches all limitations of the claim. The rejection should be withdrawn.

Claim 32. Claim 32 is dependent from claim 31 and is allowable for at least the reasons set forth above.

Claim 33. Claim 33 recites in part, “selecting ... valid ones of said faces.”

The examiner cited Subrahmanyam, Section 4.4, lines 12-15 and paragraphs 1-4 of the “Merging Operations” section on page 121 as allegedly teaching this feature. However, the cited sections do not teach any valid – invalid distinction between faces. For example, section 4.4, lines 12-15 describes splitting a face into two and possible behaviors of attributes with respect to the split faces. However, nowhere in that description is any teaching of the validity or invalidity of a face. The cited paragraphs on p. 121 also do not include any teaching of the validity or invalidity of a face. Nor has the examiner shown that CAI or the other sections of Subrahmanyam teach a validity/invalidity distinction for a face for purposes of a selection of a face. Thus, the combination of Subrahmanyam and CAI does not teach all limitations of the claim. The rejection should be withdrawn.

Claims 34-35. Claims 34-35 are dependent from claim 33 and are allowable for at least the reasons set forth above.

Claim 36. Claim 36 recite programming instructions designed to enable the apparatus to “examine facial characteristics of the faces of components.” As stated above in relation to claim 1, Subrahmanyam does not teach this feature. This rejection should be withdrawn.

Claims 37-39. Claims 37-39 are dependent from claim 36 and are allowable for at least the reasons set forth above.

Claim 42. Claim 42 recite programming instructions designed to enable the apparatus to “construct a profile based at least in part on faces of components []; generate a tool based at least in part on the constructed profile.” As stated above in relation to claim 12, Subrahmanyam does not teach this feature. This rejection should be withdrawn.

Claim 45. Claim 45 is dependent from claim 42 and is allowable for at least the reasons set forth above.

Claim 46. Claim 46 recite programming instructions designed to enable the apparatus to “replicate data representations of the located one or more bodies.” As stated above in relation to claim 29, Subrahmanyam does not teach this feature. This rejection should be withdrawn.

Claim 47. Claim 47 is dependent from claim 46 and is allowable for at least the reasons set forth above.



Claim 48. Claim 48 recite programming instructions designed to enable the apparatus to “collect one or more edges of a blank.” As stated above in relation to claim 31, Subrahmanyam does not teach this feature. This rejection should be withdrawn.

Claim 49. Claim 49 is dependent from claim 48 and is allowable for at least the reasons set forth above.

Claim 50. Claim 50 recite programming instructions designed to enable the apparatus to “select valid ones of said faces.” As stated above in relation to claim 33, Subrahmanyam does not teach this feature. This rejection should be withdrawn.

Claim 51. Claim 51 is dependent from claim 50 and is allowable for at least the reasons set forth above.

Claims 5-6, 13-14, 40-41, 43-44 were rejected under § 103 as unpatentable over Subrahmanyam in view of CAI, and in further view of Wang, “The Design and Fabrication of Welded Tubular Joints Using Solid Modeling Techniques.” The rejection is respectfully traversed.

Claims 5-6, 13-14, 40-41, 43-44 are dependent from claims 1, 12, 36, or 42, respectively. As stated above, the examiner has not shown that the combination of Subrahmanyam and CAI teaches all limitations of claims 1, 12, 36, or 42. Wang has not been shown to remedy the deficiencies of Subrahmanyam and CAI described above. Thus, the rejected claims are in condition for allowance for at least the reasons stated above.

### CONCLUSION

For the foregoing reasons, the applicant submits that the pending claims are in condition for allowance.

By responding in the foregoing remarks only to particular positions taken by the examiner, the applicant does not acquiesce with other positions that have not been explicitly addressed. In addition, the applicant’s selecting some particular arguments for the patentability of a claim should not be understood as implying that no other reasons for the patentability of that claim exist. Finally, the applicant’s decision to amend or cancel any claim should not be

Applicant : Somashekar Ramachandran  
Subrahmanyam  
Serial No. : 10/651,452  
Filed : August 29, 2003  
Page : 30 of 30

Attorney Docket No.: 15786-018001

understood as implying that the applicant agrees with any positions taken by the examiner with respect to that claim or other claims.

Please apply \$450 for the Petition for Extension of Time fee for a two-month extension, up to and including June 11, 2007 and apply any charges or credits to deposit account 06-1050.

Respectfully submitted,

Date: June 11, 2007

Andrew H. Leung  
Andrew H. Leung  
Reg. No. 55,374

Customer No.: 26181  
Fish & Richardson P.C.  
Telephone: (650) 839-5070  
Facsimile: (650) 839-5071